

Claims

1. A fluid coupling comprising:

a female connector body defining a bore extending axially inwardly into said connector body from an entrance, said entrance defined by a radially inwardly extending rim;

5 a plastic retainer received within said female connector body, said retainer includes a cylindrical ring at a first axial end and at least four approximately equally spaced locking members extending axially from said ring, said locking members are detached from each other at a second axial end, each of said locking members includes two columns, a beam connecting the two columns at the second axial end and an arm extending axially from each said beam between 10 said columns, each said arm includes a first abutment surface and a second abutment surface, said second abutment surface in abutting relation with said rim; and

a male member received within said retainer and having a radially enlarged annular upset, said upset positioned between and in abutting relation with said ring and said first abutment surfaces of said retainer.

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2. The fluid coupling of claim 1 wherein said retainer is formed of polyetheretherketone.

3. The fluid coupling of claim 1 wherein, the ratio of

$$20 \left[\frac{\text{total surface area of the first abutment surfaces}}{\pi * (D_6/2)^2 - \pi * (D_7/2)^2} \right]$$

is between 0.50 and 0.80, wherein D_6 is the outer diameter of the first abutment surfaces and D_7 is the inner diameter of the first abutment surfaces.

4. The fluid coupling of claim 3 wherein, the ratio of

$$\left[\frac{\text{total surface area of the first abutment surfaces}}{\pi * (D_6/2)^2 - \pi * (D_7/2)^2} \right]$$

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is between 0.55 and 0.60, wherein D_6 is the outer diameter of the first abutment surfaces and D_7 is the inner diameter of the first abutment surfaces.

5. The fluid coupling of claim 1 wherein ratio of the radial projection distance of

10 each of said column relative to the outer diameter of said ring is between 0.03 and 0.12.

6. The fluid coupling of claim 5 wherein ratio of the radial projection distance of each of said column relative to the outer diameter of said ring is between 0.04 and 0.06.

15 7. The fluid coupling of claim 1 wherein said connector body further defines a groove accommodating a sealing member, said groove having two shoulders extending radially outwardly from said bore.

20 8. The fluid coupling of claim 7 wherein said sealing member is an O-ring disposed in said groove.

9. The fluid coupling of claim 7 wherein the depth of said groove is less than the undeformed cross section diameter of said O-ring.

10. The fluid coupling of claim 7 wherein the O-ring is deformed by the radially outwardly surface of said groove and the outer surface of said tube.

11. The fluid coupling of claim 1 wherein a portion of said arm is connected directly
5 to said columns.

12. The fluid coupling of claim 1 wherein top surface of said arm defines a notch.

13. The fluid coupling of claim 12 wherein cross-section of said notch is L-shaped.

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14. The fluid coupling of claim 12 wherein cross-section of said notch is U-shaped.

15. The fluid coupling of claim 1 wherein said female connector body has a threaded outer surface at one end.

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16. The fluid coupling of claim 15 wherein said female connector body has a hexagonal outer surface at the other end.

17. The fluid coupling of claim 1 wherein said male member further includes a layer
20 Nylon coating the upset.